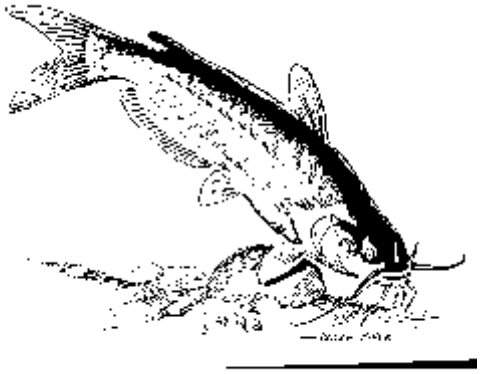
BROOKVILLE RESERVOIR

2002 Fish Management Report

J. Rhett Wisener
Assistant Fisheries Biologist



FISHERIES SECTION
INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
I.G.C. South, Room W273
402 W. Washington Street
Indianapolis, Indiana 46204

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Union and Franklin Counties

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INTRODUCTION

Brookville Reservoir is a 5,260 acre Army Corps of Engineers flood control impoundment. The reservoir is located in southeastern Indiana on the East Fork of Whitewater River. Because of its gizzard shad forage base, Brookville has been regularly stocked with an assortment of predators.

The most important of these stocked fish is walleye. Brookville Reservoir serves as the sole brood stock source of walleye for the Division of Fish and Wildlife (DFW). Nearly all of the fry and fingerling walleye that the DFW annually stocks across the state come from eggs collected at Brookville. Therefore, Brookville Reservoir is the highest priority stocking site in the state, and is annually stocked with 10.5 million walleye fry.

Striped bass and muskellunge are the other species that have been stocked. Excluding a few years when striped bass production was poor or better than planned, Brookville has been stocked every year since 1974 with 52,600 fingerling stripers. Musky stockings at Brookville are fairly insignificant and have not created much of a fishery. Musky stockings generally do not exceed more than 5,260 advanced fingerlings per year.

The last fish community survey conducted at Brookville Reservoir was in 1987. Since that time, surveys of the lake have primarily consisted of fall evaluations of stocked fish. The last fall evaluation was conducted in 2001. The present survey was conducted to assess the fish community of Brookville Reservoir with respect to predator and prey abundances.

RESULTS AND DISCUSSION

The fish community evaluation was conducted May 20 to 23 and 28 to 30, 2002. Survey effort consisted of five and a half hours of D.C. electrofishing at night, twelve standard experimental mesh gill net lifts, twelve large experimental mesh gill net lifts, and twelve trap net lifts. Lengths were recorded for all fish collected. Scales were taken from game fish, gizzard shad, and carp for age and growth analysis. Some of the larger fish were not aged due to crowded annuluses which make for inaccurate aging. Weights for all species were estimated using either district average weights, if available, or length-weight regression.

During the first week of the survey, sampling conditions were not ideal. The lake was several feet high, therefore, the Corps of Engineers was releasing water at a tremendous rate to

get the lake level down to normal pool. Falling water often times causes fish to move away from the banks and into deeper water which makes them more difficult to sample, especially with electrofishing gear. During the second week of the survey, the water level had stabilized. Even with the falling water levels the first week, which likely hindered the collection of some species, a total of 5,566 fish was collected during the entire survey that weighed an estimated 3,735.36 pounds. The collection was comprised of 23 species of fish and a hybrid.

Gizzard shad was by far the most abundant species collected by number (42.3%) and fourth most abundant by weight (13.9%). In 1987, gizzard shad accounted for 33.3% of the sample number and 14.0% of the sample weight. In the present survey, 2,354 shad were collected that were estimated to weigh about 520 pounds. Shad ranged in length from 6.7 to 13.7 inches and averaged 8.6 inches. Growth rates of shad at Brookville are well below normal compared to shad in other central Indiana impoundments. Age 2 and older shad are growing much slower than they were in 1987. No age 1 shad were found in the present survey.

Channel catfish were again second in abundance by number and first by weight. Catfish abundance by number increased from 13.2% in 1987 to 17.9%, but abundance by weight was nearly equal, 32.6% in 1987 compared to 31.9%. A total of 998 catfish, that weighed 1,193.36 pounds, was collected in the present survey. Catfish from 6.7 to 28.7 inches long were collected. The average size channel cat measured 14.1 inches. Just over 61% of the channels caught were of harvestable size, at least 12 inches. A normal distribution in size of catfish collected indicates that reproduction has been fairly consistent.

Eight hundred and forty-two bluegill, that weighed 95.15 pounds, were sampled. Bluegill abundance by both number (15.1%) and weight (2.5%) were slightly higher than in the previous survey, 11.3% and 1.5%, respectively. Bluegill were found from 1.9 to 7.8 inches long and averaged 5.2 inches. Harvestable size bluegill (6 inches or larger) accounted for 36% of those collected. Bluegill growth rates are slightly above average and since 1987 have improved for age 3 and older fish.

A bluegill fishing potential index (BGFP) was developed to compare bluegill fishing quality among Indiana's lakes and ponds (Ball and Tousignant 1996). The bluegill fishery is assigned a score from 0 to 40 based on density, growth, proportional stock density (PSD), and relative stock density (RSD_8). The current Brookville bluegill fishery received a BGFP score of 16 and a fair rating.

Carp abundance by weight was lower than it was in 1987, 17.7% compared to 21.3%, but abundance by number was about the same, 5.9% compared to 6.2% in 1987. The 327 carp, that weighed 662.66 pounds, collected in the present survey were fourth in abundance by number and third by weight. On average, carp measured just over 16 inches and the largest

carp found was 23.4 inches. As in 1987, growth rates of carp are normal.

There were 208 striped bass collected that were estimated to weigh just over 674 pounds. Stripers placed fifth in abundance by number (3.7%) and second by weight (18.0%). This was a dramatic increase from 1987 when stripers only accounted for 0.2% of the sample number and 0.7% of the weight. The increase in striped bass abundance is the result of the tremendous 1999 year class of fish. One hundred and eighty-one out of the 208 stripers collected (87%) were age 3 and they ranged in length from 15 to 22.5 inches. Overall, stripers ranged in length from 8.6 to 34.3 inches, and they averaged 18.5 inches. All of the striped bass were caught in gill nets and about 89% of them were in the large mesh nets. Striper growth is normal for Brookville Reservoir. However, compared to Harden Reservoir, the only other central Indiana lake stocked with striped bass, growth of age 3 and older fish at Brookville is much slower than Harden stripers.

With 207 fish caught, largemouth bass was the next most numerous species found (3.7%). The largemouth weighed just over 227 pounds which placed them fifth in abundance by weight (6.1%). Bass abundance by both number and weight were higher than 1987 levels, 2.7% and 3.9%, respectively. Largemouth were found up to 19.6 inches long in the present survey and they averaged 12.1 inches. Roughly 25% of the bass collected met or exceeded the minimum size limit of 14 inches or longer. Similar to 1987, largemouth bass are exhibiting average to slightly above average growth. It is taking bass just over 4 years to reach 14 inches in length.

One hundred and fifteen white crappie, that weighed 44.28 pounds, were sampled. Both white crappie abundance by number (2.1%) and weight (1.2%) were similar to 1987 levels, 2.6% and 1.8%, respectively. Crappie ranged in length from 7.7 to 11.4 inches and averaged 9.4 inches. All but four of the crappie were of harvestable size, at least 8.5 inches. The percentage of harvestable size crappie is high because no age 1 crappie and few age 2 fish were sampled. White crappie are growing slightly to well below normal. Growth of age 2 and 3 fish is slower than in 1987.

Fifty-two smallmouth bass were collected, and they weighed 22.64 pounds. Smallmouth bass abundance fell from 2.3% in 1987 to 0.9%. In the present survey, smallmouth up to age 5 and 14.3 inches long were collected. Age 3 smallmouth accounted for 44% of the collection and they ranged in length from 9.5 to 12.5 inches. Only two smallmouth were of legal size, 14 inches or longer. Smallmouth bass are growing faster now than they were in the previous survey.

In 1987, walleye represented 2.9% of the sample by number and 6.8% by weight. Walleye only comprised 0.7% of the most recent sample by number and 1.0% by weight.

Thirty-seven walleye weighing 37.54 pounds were collected. Considering the 2001 stocking of walleye was very successful, it was not surprising that 70% of the walleye sampled were age 1. The other walleye collected were between ages 2 and 6 and they ranged in length from 15.5 to 25.5 inches. Growth rates of walleye are slightly below average, however, growth is much better than it was in 1987 and 2001. On average, it now takes just under 2 years for walleye to reach legal harvestable size, 14 inches, whereas, it used to take over 2 years.

Fourteen other species and a hybrid sunfish were collected that accounted for 7.7% of the sample number and 6.9% of the sample weight. The most numerous of these species were longear sunfish, quillback, green sunfish, and spotfin shiner. Other species collected that would be of interest to anglers included black crappie, white bass, and flathead catfish. Black crappie up to 11.0 inches long were found and almost 36% were 8.5 inches or longer. White bass abundance by number dropped from 2.4% in 1987 to 0.4% in the present survey. However, the white bass that were collected averaged over 10 inches in length and 62% of them were at least 11 inches long. The largest flathead measured 33.5 inches. Flathead catfish, especially large ones, are seldom collected during lake surveys so it is likely that there are some much bigger flatheads out there.

CONCLUSIONS AND RECOMMENDATIONS

Overall, the fishery at Brookville Reservoir appears to have improved since 1987. Growth rates of game fish, except for white crappie, have either improved or remained the same. Although gizzard shad abundance has increased, the abundance of channel catfish, bluegill, striped bass, largemouth bass, and crappie all increased or remained the same. Shad of all ages feed heavily on zooplankton, as do the young of most other species. Therefore, as the shad population expands, there is more competition between shad and young-of-the-year fish for food. Often times this results in poorer recruitment and declining numbers of desirable fish like bluegill and bass, but for the most part this has not occurred.

Smallmouth bass, walleye, and white bass were the only desirable species to significantly decline in sample number. However, the declines may not be as severe as the numbers indicate. It is possible that collections of these three species were more biased than others due to habitat preferences and sampling conditions. The southern half of Brookville Reservoir provides more rocky habitat and deeper water than the northern half of the lake, and this is where smallmouth have been more commonly found in the past. However, it was in the lower half of the lake where sampling occurred when the lake level was falling at the greatest rate and survey conditions were at their worst.

Walleye and white bass are also commonly found throughout the southern end of

Brookville Reservoir. In April of 2002, there was no shortage of walleye found along the dam during broodstock collections. There were more female walleye collected and spawned in 2002 than in the past two years. Previous surveys of other reservoirs have shown that walleye are difficult to sample when the water level is quickly dropping. White bass may also become much more difficult to collect when the water is falling. Therefore, if walleye and white bass, like smallmouth bass, were more abundant in the lower half of the lake at the time of the survey, it is possible that these species were under sampled compared to species that were evenly distributed throughout the lake or more abundant in the upper half.

Because Brookville is the site of the DFW's walleye broodstock collections, it is important that walleye continue to be stocked annually at the rate of 2,000 fry per acre (10.5 million total). To help ensure that future year classes of walleye are available to support the egg taking operation, a change in stocking strategy was recommended in 2001. Rather than stocking the lake with the first 10.5 million fry that hatch, the lake should be stocked with both early and late hatched fry (Keller 2002). This will allow the water to warm more and plankton levels to increase before all the walleye fry are stocked. Successful year classes like that of 2001 will hopefully be more common because of the change in strategy.

Up to 52,600 striped bass fingerlings (10 per acre) should also be stocked annually. Because most year classes of striped bass are not very successful, growth of stripers is much slower at Brookville than at other lakes, and angler interest in them is low (Sapp and Ball 2001), Brookville should be a low priority stocking site for striped bass. If surplus fish are available, musky may also be stocked in the lake. In the fall of 2002, Brookville was stocked with 14,568 surplus musky which was by far the greatest number ever stocked.

A fall evaluation should be conducted at the lake in 2003. The fall evaluation will be done to assess stocking success of walleye and striped bass. In the spring of 2005, black bass sampling should be conducted to better assess largemouth and smallmouth bass populations. Another fish community survey should be done in 2006 to judge how the fishery is doing and to determine if a change in management strategy is needed.

Fishing for channel catfish should be outstanding at Brookville Reservoir because there is an abundance of fish and many of them are of desirable size to anglers. There is a daily bag limit of ten catfish. Bluegill and crappie fishing should be fair. With the 1999 year class of striped bass anchoring the fishery, anglers targeting this fish should have better luck catching bigger stripers in the coming years than they have had in awhile. There is a two fish daily limit on stripers and no size limit. With a quarter of the largemouth in the present survey meeting or exceeding the minimum size limit and the opportunity to catch both largemouth and smallmouth, bass anglers may want to give Brookville a try. In addition to the minimum size limit of 14 inches

for black bass, there is a daily bag limit of five fish. However, anglers are encouraged to release all bass that they catch. With the addition of the 2001 year class of walleye to those that were already harvestable, Brookville will continue to provide one of the state's best walleye fisheries where anglers have the chance to catch both numbers and good size walleye. The daily bag limit for walleye is six fish and the minimum size limit is 14 inches.

Zebra mussels were detected in the lake in 2001. The zebra mussel is an exotic species that has been found in various bodies of water throughout Indiana. Zebra mussels are not desirable because they are very efficient filter feeders of plankton. Plankton is the base of the food chain. Therefore, if zebra mussels become abundant in a body of water and they reduce the amount of plankton available to young fish, survival and growth of many species could be impacted.

The larval form of zebra mussels, known as veligers, are free swimming and can be transported from one body of water to another via water carried in many items such as a minnow bucket, a boat's livewell, bilge pump, motor, etc. To prevent the spread of veligers, anglers need to drain their livewells, motor, and lines of water and allow them to dry completely before putting their boat in somewhere else or they should flush the water holding areas with a mild bleach solution. Also, fish and bait should not be transported from one body of water to another because veligers can be transported this way.

LITERATURE CITED

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Submitted by: J. Rhett Wisener, Assistant Fisheries Biologist
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Approved by: Douglas C. Keller, Fisheries Biologist

Approved by: _____
Thomas M. Flatt, Fisheries Supervisor
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